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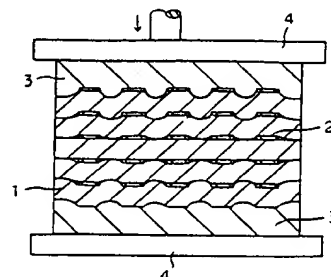
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(54) MANUFACTURE OF LAMINATED CAPACITOR

(11) 3-106008 (A) (43) 2.5.1991 (19) JP
 (21) Appl. No. 64-244706 (22) 20.9.1989
 (71) HITACHI AIC INC (72) AKIRA HIRASAWA(2)
 (51) Int. Cl⁵. H01G4/30, H01G4/12

PURPOSE: To prevent the generation of defective products caused by delamination and the like by a method wherein, after dielectric sheets have been laminated, they are press-bonded through the intermediary of a porous plastic sheet.

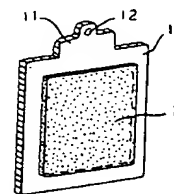
CONSTITUTION: Internal electrodes 2 are printed on the dielectric sheets 1 of ceramic and the like. The dielectric sheets 1, on which the internal electrodes 2 were printed, are laminated. After the dielectric sheets 1 have been stacked, a porous plastic sheet 3 such as polypropylene and the like is superposed on the upper and the lower sides, and pressure is applied from above by a press 4. After pressing, a laminated capacitor is manufactured by conducting a treatment such as cutting, sintering, attachment of terminal and the like, and a laminated capacitor is manufactured. As a result, the bubbles between the dielectric sheets can be removed, the defects such as delamination cracks and the like can be eliminated, and the laminated capacitor, on which characteristics are improved, can be obtained.

**(54) ELECTRIC DOUBLE LAYER CAPACITOR**

(11) 3-106009 (A) (43) 2.5.1991 (19) JP
 (21) Appl. No. 64-243943 (22) 20.9.1989
 (71) ISUZU MOTORS LTD (72) YOSHINOBU TSUCHIYA(3)
 (51) Int. Cl⁵. H01G9/00

PURPOSE: To simplify the manufacturing process of the title capacitor and to prevent the deterioration of efficiency due to the effect of the residual bonding agent and the like by a method wherein activated powder is molded by conducting plasma sintering into porous low density on the surface of a current-collecting plate which is formed by sintering graphite into the state of high density.

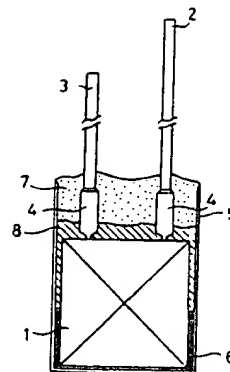
CONSTITUTION: A high density graphite sintered material is used for a current-collecting plate 1 with which the electric charge of a polarized electrode is collected, and activated charcoal powder is sintered on the surface of the current-collecting plate by conducting plasma sintering so as to obtain porous surface. Accordingly, a low value of the internal resistance of the current-collecting plate 1 and the contact resistance of the electrode 2 can be obtained without adding pressure from outside, and the thickness and the filling quantity of activated charcoal can be made uniform. As a result, the process of manufacture can be simplified and an excellent electric double layer capacitor having large electrostatic capacitance can be obtained.

**(54) MANUFACTURE OF SOLID STATE ELECTROLYTIC CAPACITOR**

(11) 3-106010 (A) (43) 2.5.1991 (19) JP
 (21) Appl. No. 64-244297 (22) 20.9.1989
 (71) SANYO ELECTRIC CO LTD (72) KENJI KAGUMA(1)
 (51) Int. Cl⁵. H01G9/02, H01G9/08, H01G9/10

PURPOSE: To prevent deterioration of TCNQ salt by a method wherein, after TCNQ (7,7,8,8-tetracyanoquinodimethane) salt has been impregnated into a capacitor element, the capacitor element is solidified by cooling, and it is coated with low molecular weight polymer.

CONSTITUTION: Conductive TCNQ salt, which can be fused by heating and also can be used as the electrolyte for capacitor after solidified by cooling, is heated up and impregnated into a capacitor element 1 which is wound between the anode foil, consisting of chemically formed metal foil having the valve action such as aluminum, tantalum, niobium and the like, and the cathode foil consisting of metal thin foil through the intermediary of a sheet of separator paper. After the capacitor element 1 has been solidified by cooling, at least a part of the capacitor element 1 is coated or sealed with low molecular weight polymer 8. Accordingly, the characteristics of the TCNQ salt 6 is not deteriorated, and also as the penetration of moisture can be shut out completely when the capacitor element is coated or sealed with epoxy resin after it has been coated with low molecular weight polymer, its characteristics can be improved to a high degree.



PATENT ABSTRACTS OF JAPAN

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(71)Applicant : HITACHI AIC INC

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(72)Inventor : HIRASAWA AKIRA

AKAO SEIJI

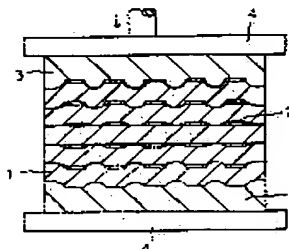
HOTTA MASARU

(54) MANUFACTURE OF LAMINATED CAPACITOR

(57)Abstract:

PURPOSE: To prevent the generation of defective products caused by delamination and the like by a method wherein, after dielectric sheets have been laminated, they are press-bonded through the intermediary of a porous plastic sheet.

CONSTITUTION: Internal electrodes 2 are printed on the dielectric sheets 1 of ceramic and the like. The dielectric sheets 1, on which the internal electrodes 2 were printed, are laminated. After the dielectric sheets 1 have been stacked, a porous plastic sheet 3 such as polypropylene and the like is superposed on the upper and the lower sides, and pressure is applied from above by a press 4. After pressing, a laminated capacitor is manufactured by conducting a treatment such as cutting, sintering, attachment of terminal and the like, and a laminated capacitor is manufactured. As a result, the bubbles between the dielectric sheets can be removed, the defects such as delamination cracks and the like can be eliminated, and the laminated capacitor, on which characteristics are improved, can be obtained.



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⑭ 公開 平成3年(1991)5月2日

審査請求 未請求 請求項の数 1 (全2頁)

⑮ 発明の名称 積層型コンデンサの製造方法

⑯ 特 願 平1-244706

⑰ 出 願 平1(1989)9月20日

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明 細 書

1. 発明の名称

積層型コンデンサの製造方法

2. 特許請求の範囲

(1) 誘電体シートの表面に内部電極を印刷した後積み重ねて加圧圧着する積層型コンデンサの製造方法において、積み重ねた誘電体シートを多孔質プラスチックシートを介して加圧圧着することを特徴とする積層型コンデンサの製造方法。

3. 発明の詳細な説明

(産業上の利用分野)

本発明は積層型コンデンサの製造方法に関する。

(従来の技術)

積層セラミックコンデンサ等の積層型コンデンサは、従来、誘電体シートに内部電極を印刷し、次いでこの誘電体シートを積み重ねて、加圧圧着し、切断、焼成、端子取付け等の処理を行なって製造している。

積層型コンデンサの容量は、誘電体シートの積層枚数により決まり、容量が大きい程、積層枚数が多くなる。

(発明が解決しようとする課題)

しかし、誘電体シートの積層枚数が増えると、内部電極を印刷した部分と印刷しない部分との厚さの差が大きくなる。そのため、従来の加圧圧着方法では、内部電極の印刷部分に集中して圧力が加わり、内部電極を印刷しない部分には圧力が加わり難く気泡が残る。気泡が残ると、焼成の際に、デラミネーションや粗大気泡、クラック等の欠陥を生じる欠点がある。

本発明は、以上の欠点を改良し、デラミネーション等による不良を防止し、特性を向上しうる積層型コンデンサの製造方法を提供することを目的とする。

(課題を解決するための手段)

本発明は、上記の目的を達成するために、誘電体シートを積み重ねた後に、この誘電体シートを多孔質プラスチックシートを介して加圧圧着する

ことを特徴とする積層型コンデンサの製造方法を提供するものである。

(作用)

積み重ねた誘電体シートを多孔質プラスチックシートを介して加圧圧着すると、圧力を誘電体シートの表面に比較的均一に分散できるために、誘電体シート間の気泡を除去でき、気泡が残るための不良を防止できる。

(実施例)

以下、本発明を実施例に基づいて説明する。

まず、第1図に示す通り、セラミック等の誘電体シート1に内部電極2を印刷する。そして内部電極2印刷後の誘電体シート1を第2図に示す通り積み重ねる。誘電体シート1を積み重ねた後、第3図に示す通り、上下にポリプロピレン製の多孔質プラスチックシート3を重ね、その上からプレス4により加圧する。

加圧後は、従来通り、切断や焼成、端子取付け等の処理を行い積層型コンデンサを製造する。

上記実施例によれば、誘電体シート1の上下に

多孔質プラスチックシート3を重ね、その上から加圧圧着しているために、誘電体シート1間の気泡を除去できる。

(発明の効果)

以上の通り、本発明の製造方法によれば、誘電体シートを多孔質プラスチックシートを介して加圧圧着することにより誘電体シート間の気泡を除去でき、デラミネーションやクラック等による欠陥を無くし特性を向上しうる積層型コンデンサが得られる。

4. 図面の簡単な説明

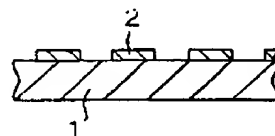
第1図～3図は本発明の実施例の製造工程を示し、第1図は内部電極を印刷した誘電体シートの断面図、第2図は誘電体シートを積み重ねた状態の断面図、第3図は誘電体シートを加圧圧着している状態の断面図を示す。

1…誘電体シート、 2…内部電極、

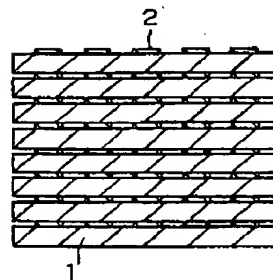
3…多孔質プラスチックシート。

特許出願人 日立コンデンサ株式会社

第1図



第2図



第3図

